

## What is Claimed Is:

- [c1] 1. A method for initializing a PPPoE session between a PPPoE client of a host and an access concentrator during a PPPoE discovery stage, the method comprising the steps of:  
determining, at the PPPoE client, a status of a connection between the host and the access concentrator prior to a transmission of a PPPoE discovery packet; and  
transmitting the PPPoE discovery packet for reception by the access concentrator when the status indicates a physical layer connection is established.
- [c2] 2. The method of Claim 1, further comprising the step of delaying the transmission of the PPPoE discovery packet for a predetermined time period when the status indicates a physical layer connection is not established.
- [c3] 3. The method of Claim 2, wherein the predetermined time period is one of a group consisting of: a constant time period, a random time period, a linearly increasing time period, and an exponentially increasing time period.
- [c4] 4. The method of Claim 2, further comprising the step of attempting to establish a physical layer connection between the host and the access concentrator when the status indicates a physical layer connection is not established.
- [c5] 5. The method of Claim 1, further comprising the step of attempting to establish a physical layer connection between the host and the access concentrator when the status indicates a physical layer connection is not established.
- [c6] 6. The method of Claim 1, wherein the step of determining the status of the physical layer connection includes querying a physical interface in electrical communication with a transmission medium between the host and the access concentrator.
- [c7] 7. The method of Claim 6, wherein the step of querying the physical interface includes querying a software interface adapted to monitor a status of the physical interface.

- [c8] 8. The method of Claim 1, wherein the PPPoE discovery packet includes one of a group consisting of: a PADI packet and a PADR packet.
- [c9] 9. The method of Claim 1, further comprising the step of generating the PPPoE discovery packet when the status indicates a physical layer connection is established.
- [c10] 10. A method for initializing a PPPoE session between a PPPoE client of a host and an access concentrator during a PPPoE discovery stage, the method comprising the steps of:  
determining, at the PPPoE client, a status of a connection between the host and the access concentrator; and  
waiting, at the PPPoE client, for a first PPPoE discovery packet from the access concentrator when the status indicates a physical layer connection is established.
- [c11] 11. The method of Claim 10, further comprising the step of terminating the PPPoE discovery stage when the status indicates a physical layer connection is not established.
- [c12] 12. The method of Claim 10, further comprising the step of attempting to establish a physical layer connection between the host and the access concentrator when the status indicates a physical layer connection is not established.
- [c13] 13. The method of Claim 10, further comprising the step of transmitting a second PPPoE discovery packet for reception by the access concentrator when the status indicates a physical layer connection is established.
- [c14] 14. The method of Claim 13, further comprising the step of delaying a transmission of the second PPPoE discovery packet for a predetermined time period when the status indicates a physical layer connection is not established.
- [c15] 15. The method of Claim 14, wherein the predetermined time period is one of a group consisting of: a constant time period, a random time period, a linearly increasing time period, and an exponentially increasing time period.

- [c16] 16. The method of Claim 13, further comprising the step of generating, at the PPPoE client, the second PPPoE discovery packet when the status indicates a physical layer connection is established.
- [c17] 17. The method of Claim 13, wherein the second PPPoE discovery packet includes one of a group consisting of: a PADI packet and a PADR packet.
- [c18] 18. The method of Claim 10, wherein the step of determining the status of the physical layer connection includes querying a physical interface in electrical communication with a transmission medium between the host and the access concentrator.
- [c19] 19. The method of Claim 10, wherein the step of querying the physical layer interface includes querying a software interface adapted to monitor a status of the physical interface.
- [c20] 20. The method of Claim 10, wherein the first PPPoE discovery packet includes one of a group consisting of: a PADO packet and a PADS packet.
- [c21] 21. In a customer premise access equipment (CPE) having a processor and a physical interface operably connected to the processor and to a transmission medium between the CPE and an access concentrator, a computer readable medium comprising a set of executable instructions adapted to manipulate the processor to:
- determine a status of a connection between the physical interface and the access concentrator prior to a transmission of a first PPPoE discovery packet;
  - and
  - provide the first PPPoE discovery packet to the physical interface for transmission to the access concentrator when the status indicates a physical layer connection is established.
- [c22] 22. The computer readable medium of Claim 21, further comprising executable instructions adapted to manipulate the processor to delay the provision of the first PPPoE discovery packet to the physical interface for a predetermined time period when the status indicates a physical layer connection is not established.



- [c30] 30. The computer readable medium of Claim 29, wherein the second PPPoE discovery packet includes one of a group consisting of: a PADO packet and a PADS packet.
- [c31] 31. The computer readable medium of Claim 21, further comprising executable instructions adapted to manipulate the processor to terminate a PPPoE discovery stage when the status indicates the physical layer connection is not established.
- [c32] 32. The computer readable medium of Claim 21, further comprising executable instructions adapted to manipulate the processor to generate the first PPPoE discovery packet when the status indicates a physical layer connection is established.
- [c33] 33. The computer readable medium of Claim 21, wherein the set of executable instructions is implemented as part of a network protocol stack.
- [c34] 34. A customer premise access equipment (CPE) comprising:  
a physical interface operably connected to a transmission medium between the CPE and an access concentrator; and  
a PPPoE client in bi-directional communication with the physical interface and being adapted to:  
determine a status of a physical layer connection between the physical interface and the access concentrator over the transmission medium; and  
provide the first PPPoE discovery packet to the physical interface for transmission over the transmission medium to the access concentrator when the status indicates the physical layer connection is established.
- [c35] 35. The CPE of Claim 34, wherein the PPPoE client is further adapted to delay the provision of the first PPPoE discovery packet to the physical interface for a predetermined time period when the status indicates a physical layer connection is not established.
- [c36] 36. The CPE of Claim 35, wherein the predetermined time period is one of a group consisting of: a constant time period, a random time period, a linearly increasing time period, and an exponentially increasing time period.

- [c37] 37. The CPE of Claim 34, wherein the PPPoE client is further adapted to query the physical interface to determine the status of the physical layer connection.
- [c38] 38. The CPE of Claim 34, further including a software interface in communication with the physical interface and the PPPoE client and being adapted to monitor a status of the physical interface, and wherein the PPPoE client is further adapted to query the software interface to obtain the status of the physical interface.
- [c39] 39. The CPE of Claim 34, wherein the first PPPoE discovery packet includes one of a group consisting of: a PADI packet and a PADR packet.
- [c40] 40. The CPE of Claim 34, wherein the PPPoE client is further adapted to wait for a second PPPoE discovery packet from the access concentrator when the status indicates a physical layer connection is established.
- [c41] 41. The CPE of Claim 40, wherein the second PPPoE discovery packet includes one of a group consisting of: a PADO packet and a PADS packet.
- [c42] 42. The CPE of Claim 34, wherein the PPPoE client is further adapted to terminate a PPPoE discovery stage when the status indicates the physical layer connection is not established.
- [c43] 43. The CPE of Claim 34, wherein the PPPoE client is further adapted to generate the first PPPoE discovery packet when the status indicates a physical layer connection is established.
- [c44] 44. The CPE of Claim 34, wherein the PPPoE client is implemented as part of a network protocol stack.
- [c45] 45. A communications processor for use in a customer premise access equipment (CPE), the CPE having a physical interface in electrical communication with a transmission medium between the CPE and an access concentrator, the processor comprising:  
a network protocol stack; and  
a PPPoE client in bi-directional communication with the physical interface and being adapted to:

determine a status of a physical layer connection between the physical interface and the access concentrator over the transmission medium; and provide the first PPPoE discovery packet to the physical interface for transmission over the transmission medium to the access concentrator when the status indicates the physical layer connection is established.

[c46] 46. The communications processor of Claim 45, wherein the PPPoE client is further adapted to delay the provision of the first PPPoE discovery packet to the physical interface for a predetermined time period when the status indicates a physical layer connection is not established.

[c47] 47. The communications processor of Claim 46, wherein the predetermined time period is one of a group consisting of: a constant time period, a random time period, a linearly increasing time period, and an exponentially increasing time period.

[c48] 48. The communications processor of Claim 45, wherein the PPPoE client is further adapted to query the physical interface to determine the status of the physical layer connection.

[c49] 49. The communications processor of Claim 45, wherein a software interface is in communication with the physical interface and the PPPoE client and is adapted to monitor a status of the physical interface, and the PPPoE client is further adapted to query the software interface to obtain the status of the physical interface.

[c50] 50. The communications processor of Claim 45, wherein the first PPPoE discovery packet includes one of a group consisting of: a PADI packet and a PADR packet.

[c51] 51. The communications processor of Claim 45, wherein the PPPoE client is further adapted to wait for a second PPPoE discovery packet from the access concentrator when the status indicates a physical layer connection is established.

[c52] 52. The communications processor of Claim 51, wherein the second PPPoE

discovery packet includes one of a group consisting of: a PADO packet and a PADS packet.

- [c53] 53. The communications processor of Claim 45, wherein the PPPoE client is further adapted to terminate a PPPoE discovery stage when the status indicates the physical layer connection is not established.
- [c54] 54. The communications processor of Claim 45, wherein the PPPoE client is further adapted to generate the first PPPoE discovery packet when the status indicates a physical layer connection is established.
- [c55] 55. The communications processor of Claim 45, wherein the PPPoE client is implemented as part of the network protocol stack.